

THE FOLLOWING PAGES
ARE TO BE PLACED
IN **PART I**
OF THE
CHESTERFIELD COUNTY WATER AND SEWER
SPECIFICATIONS AND PROCEDURES

- k) _____ Engineer has designed water system in accordance with available pressures and has provided fire flow and pressure calculations, in accordance with Appendix 14.
- l) _____ Line location is shown 4' from face of curb or 2' off pavement where there is ditch.
- m) _____ Pipe sizes noted on plans.
- n) _____ Ditch lines are shown on the plan and depth of ditch(s) are shown on the profile at the fire hydrant locations and service lines, where necessary.
- o) _____ Water line stubs for future extensions are designed to be installed beyond the edge of pavement.
- p) _____ Location of water meter boxes are shown outside of non-vehicular traveled areas. Where it is not possible to locate the boxes out of the traveled areas. Where it is not possible to locate the boxes out of the driveways, and/or vehicular traveled area, a cast iron box is specified.
- q) _____ For water line tie-ins, the engineer has shown the valve to be used for cut off during the tie-in. Where tapping the main line vs. cuttings in a tee is applicable, the engineer has evaluated which method will be used as outlined in the County's Design Standards.
- r) _____ Knockdown meter box shall not be located within any travel areas.
- s) _____ Water line profiles are shown.

Date: _____

Engineering Firm: _____

Engineer's Name: _____

(Print Name)

CERTIFICATION

53. _____ Water line stubs for future extensions are designed to be installed beyond the edge of pavement.
54. _____ Location of water meter boxes are shown outside of non-vehicular traveled areas. Where it is not possible to locate the boxes out of the driveways, and/or vehicular traveled area, a cast iron box is specified.
55. _____ For water line tie-ins, the engineer has shown the valve to be used for cut off during the tie-in. Where tapping the main line vs. Cutting in a tee is applicable, the engineer has evaluated which method will be used as outlined in the County's Design Standards.
56. _____ Necessary easement plats on-site and/or off-site have been submitted for processing by the right of way section. Plats conform to the requirements reflected on Exhibit A in Appendix 4.
57. _____ The engineer understands that any changes made to the road, drainage, water and/or sewer design will require a submittal to the Utilities Department for review and approval of the revised water and sewer plans reflecting those changes.
58. _____ If the waterline is greater than sixteen inches in diameter and/or the sewer serves over 400 people, plans need to be submitted to the Virginia Department of Health for review and approval. A copy of the transmittal letter must be attached to the engineer's checklist when the checklist is submitted.
59. _____ If horizontal bore is required, bore location, length of bore, pit location (average 8' x 35') are shown and shown in relation to all existing and/or proposed utilities on the plan and profile.
60. _____ Utility plans reflect those conditions as approved by the Planning Commission/Board of Supervisors.
61. _____ Engineer has contacted Virginia Power and received as-built information. Utility plans reflect this information accurately and is in accordance with the "Overhead High Voltage Line Safety Act."
62. _____ A NOTE stating that the contractor must field verify the inverts of all existing manholes, gas lines, other utility lines prior to the start of construction.
63. _____ All pipe between manholes are of like material and class.
64. _____ Knockdown meter box shall not be located within any travel areas.
65. _____ Water line profiles are shown.

THE FOLLOWING PAGES
ARE TO BE PLACED
IN **PART II**
OF THE
CHESTERFIELD COUNTY WATER AND SEWER
SPECIFICATIONS AND PROCEDURES

PART II

STANDARD DETAILS CHESTERFIELD COUNTY, VIRGINIA

INDEX OF DRAWINGS

INSTRUCTIONS for viewing and/or printing the Standards Details:

To view PART II, click on the blue highlighted area above. After pulling up PART II, click on “**BOOKMARKS**” in the left hand margin of the document to locate various details. To print the document in its entirety, click FILE – PRINT. (When printing the document, please remember to print this table of contents and include it in your book.)

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Blocking Detail (Tees)	BLK-02
Blocking Detail (Plugs, Caps, and Hydrants)	BLK-03
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Casing Detail for Gravity Sewer Lines	CAS-02
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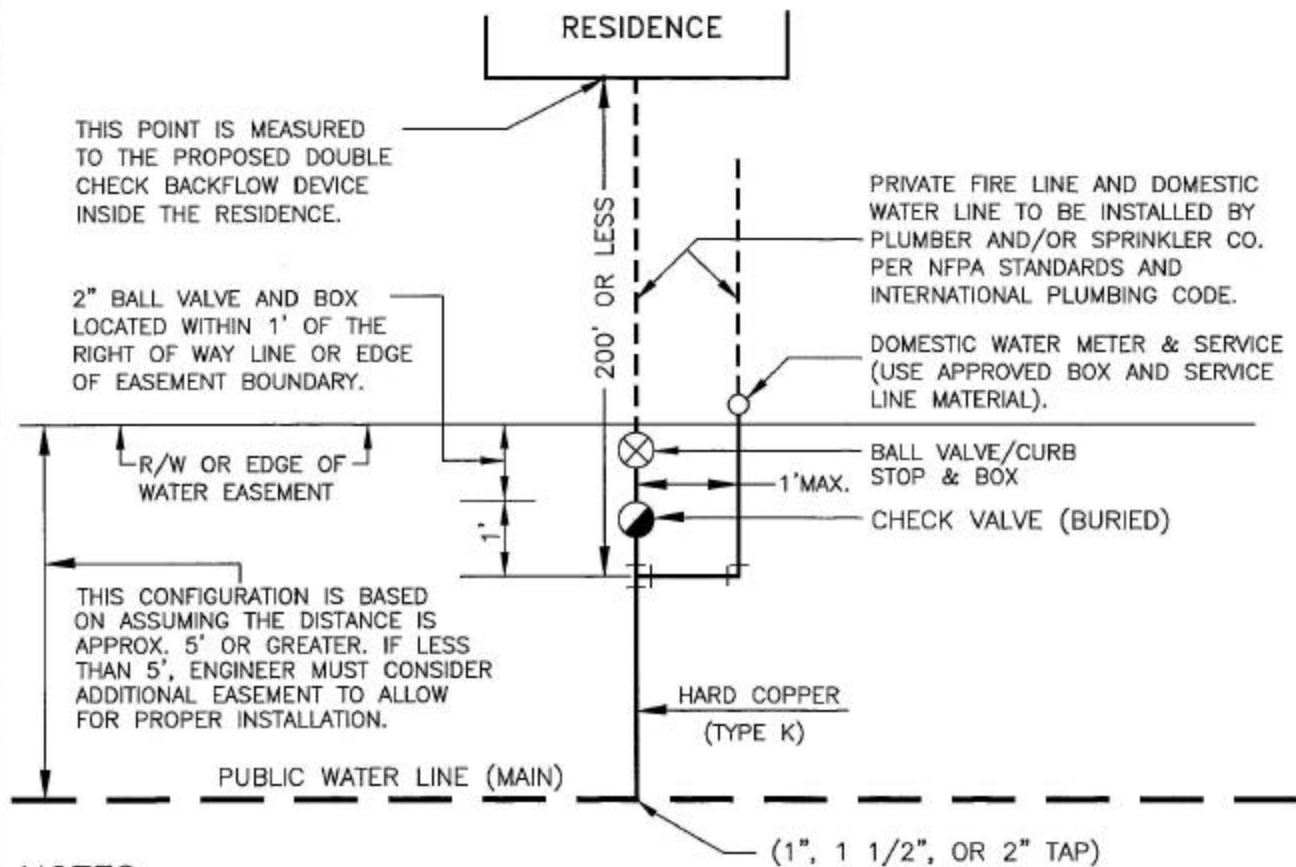
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DEPARTMENT OF PUBLIC UTILITIES



NOTES:

- ON ALL NEW WATER MAINS WHERE FIRE LINES ARE PROPOSED, DEVELOPER SHALL HAVE (HIS UTILITY CONTRACTOR ACCEPTABLE TO THE UTILITIES DEPARTMENT) INSTALL, UP TO WATER METER THE BALL VALVE AND BOX, THE NECESSARY FIRE/DOMESTIC SERVICE COMBINATION, PLUS ANY OTHER REQUIRED SERVICES I.E., IRRIGATION, ETC.
- WHERE FIRE LINE TO BUILDING IS 200' OR LESS FROM THE PUBLIC MAIN, THE FIRE LINE SYSTEM MAY BE INSTALLED ACCORDING TO THIS DETAIL. IF THE OWNER CHOOSES TO HAVE THE DOUBLE-CHECK ASSEMBLY INSTALLED IN A VAULT OUTSIDE OF BUILDING, FIR-2 DETAIL MUST BE USED.
- ALL FIRE LINES MUST HAVE AT LEAST 3.5 FEET OF GROUND COVER.
- USE BALL VALVES AS MANUFACTURED BY FORD, McDONALD, OR APPROVED EQUAL.
- USE CHECK VALVES AS MANUFACTURED BY W.O.G. JENKINS; GRINNELL; OR APPROVED EQUAL.
- CONNECTIONS FOR 1 1/2" AND 2" FIRE LINE SERVICES WILL BE SWEAT 95/5 (LEAD LESS) SOLDER AND A SUITABLE FLUX; APPROVED COMPRESSION FITTINGS; OR A ProPress SYSTEM.

(200 FEET OR LESS)

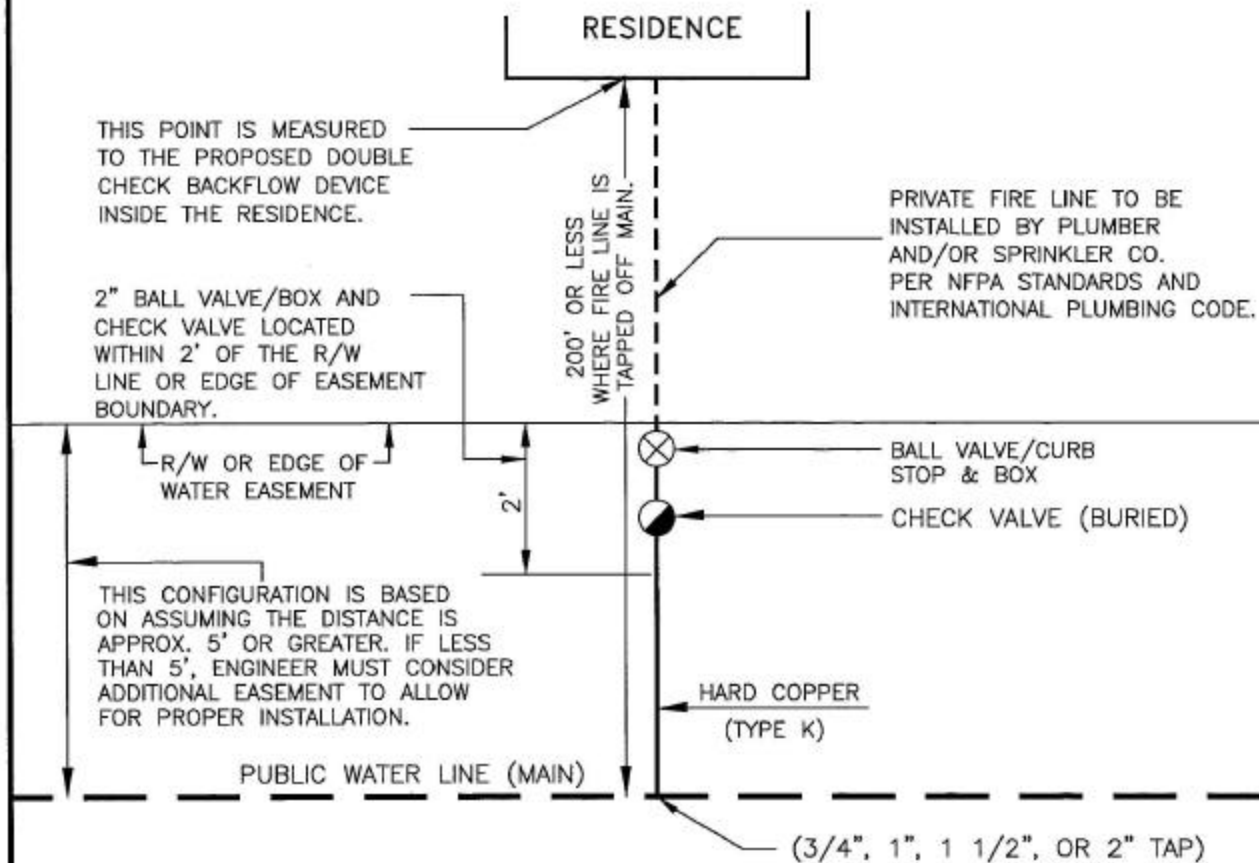
DATE
DEC. 2003

REVISIONS
Jan. 2005

TYPICAL PLAN VIEW OF PROPOSED 2"
OR SMALLER SINGLE FAMILY RESIDENTIAL
FIRE LINE SYSTEMS (WITH DOMESTIC SERVICE LINE)

DRWG. NO.
FIR-1B
NFPA 13D
(1of4)

DEPARTMENT OF PUBLIC UTILITIES



NOTES:

- ON ALL NEW WATER MAINS WHERE FIRE LINES ARE PROPOSED, DEVELOPER SHALL HAVE HIS UTILITY CONTRACTOR (ACCEPTABLE TO THE UTILITIES DEPARTMENT) INSTALL A SINGLE FIRE LINE UP TO THE BALL VALVE AND WATER METER BOX.
- WHERE FIRE LINE TO BUILDING IS 200' OR LESS FROM THE PUBLIC MAIN, THE FIRE LINE SYSTEM MAY BE INSTALLED ACCORDING TO THIS DETAIL IF THE OWNER CHOOSES TO HAVE THE DOUBLE-CHECK ASSEMBLY INSTALLED IN A VAULT OUTSIDE OF BUILDING, FIR-2 DETAIL MUST BE USED.
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(200 FEET OR LESS)

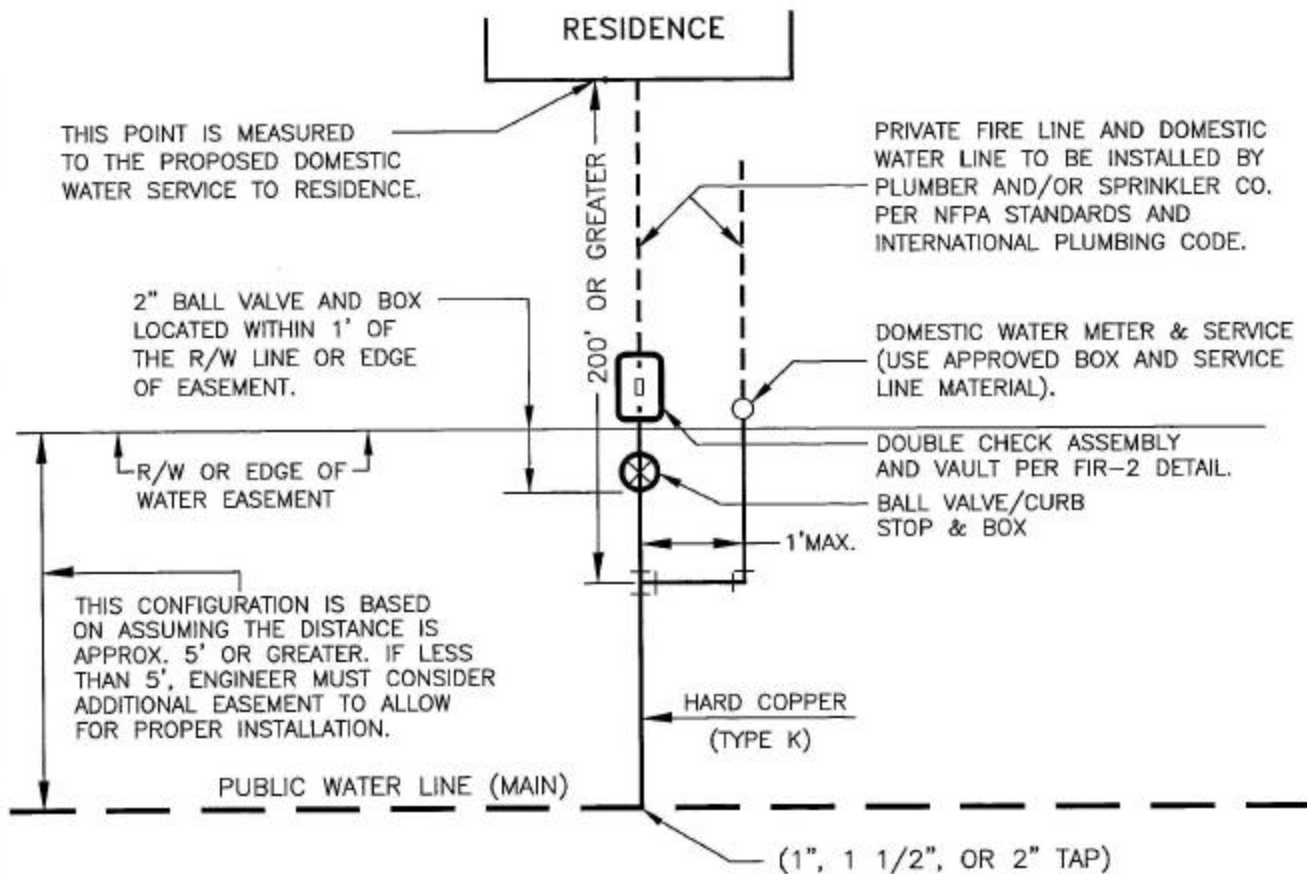
DATE
DEC. 2003

REVISIONS
JAN. 2005

TYPICAL PLAN VIEW OF PROPOSED 2"
OR SMALLER SINGLE FAMILY RESIDENTIAL
FIRE LINE SYSTEMS (WITHOUT DOMESTIC SERVICE LINE)

DRWG. NO.
FIR-1B
NFPA 13D
(2of4)

DEPARTMENT OF PUBLIC UTILITIES



NOTES:

- ON ALL NEW WATER MAINS WHERE FIRE LINES ARE PROPOSED, DEVELOPER SHALL HAVE HIS UTILITY CONTRACTOR (ACCEPTABLE TO THE UTILITIES DEPARTMENT) INSTALL A SINGLE FIRE LINE UP TO THE BALL VALVE AND WATER METER BOX.
- WHERE FIRE LINE TO BUILDING IS 200' OR GREATER FROM THE PUBLIC MAIN, THE FIRE LINE SYSTEM MUST BE INSTALLED ACCORDING TO THIS DETAIL AND THE DOUBLE-CHECK ASSEMBLY MUST BE INSTALLED IN A VAULT AT THE PROPERTY LINE OR EDGE OF EASEMENT.
- ALL FIRE LINES MUST HAVE AT LEAST 3.5 FEET OF GROUND COVER.
- USE BALL VALVES AS MANUFACTURED BY FORD, McDONALD, OR APPROVED EQUAL.
- CONNECTIONS FOR 1 1/2" AND 2" FIRE LINE SERVICES WILL BE SWEAT 95/5 (LEAD LESS) SOLDER AND A SUITABLE FLUX; APPROVED COMPRESSION FITTINGS; OR A ProPress SYSTEM.

(200 FEET OR GREATER)

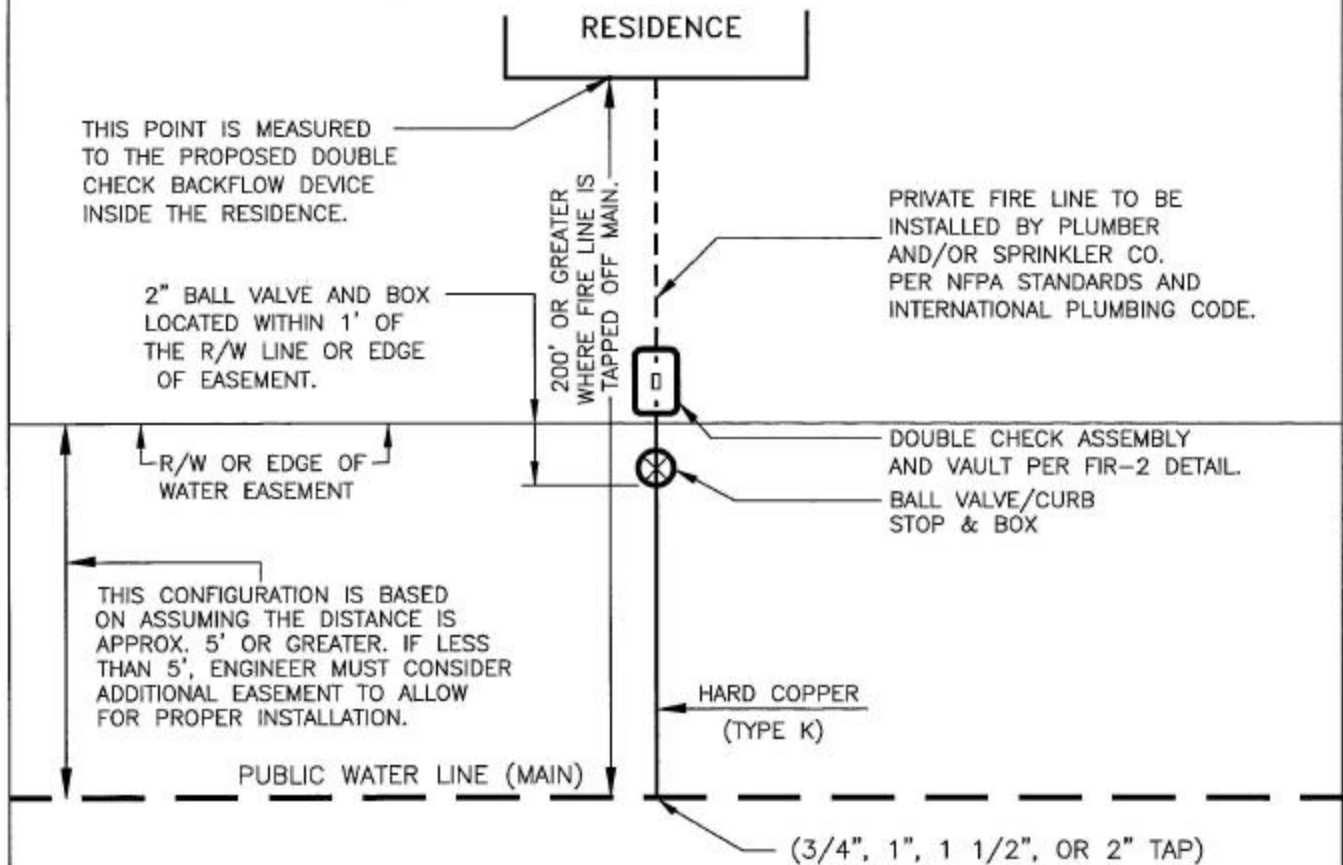
DATE
JAN. 2005

REVISIONS

**TYPICAL PLAN VIEW OF PROPOSED 2"
OR SMALLER SINGLE FAMILY RESIDENTIAL
FIRE LINE SYSTEMS (WITH DOMESTIC SERVICE LINE)**

DRWG. NO.
FIR-1B
NFPA 13D
(3of4)

DEPARTMENT OF PUBLIC UTILITIES



NOTES:

- ON ALL NEW WATER MAINS WHERE FIRE LINES ARE PROPOSED, DEVELOPER SHALL HAVE HIS UTILITY CONTRACTOR (ACCEPTABLE TO THE UTILITIES DEPARTMENT) INSTALL A SINGLE FIRE LINE UP TO THE BALL VALVE AND WATER METER BOX.
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(200 FEET OR GREATER)

DATE
JAN. 2005

REVISIONS

TYPICAL PLAN VIEW OF PROPOSED 2"
OR SMALLER SINGLE FAMILY RESIDENTIAL
FIRE LINE SYSTEMS (WITHOUT DOMESTIC SERVICE LINE)

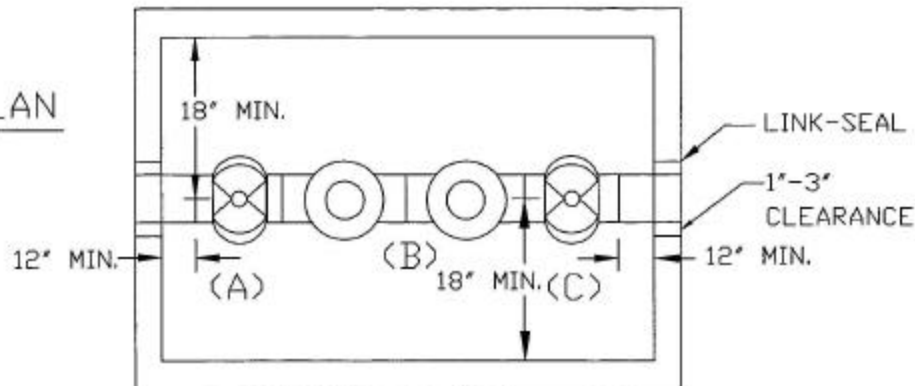
DRWG. NO.
FIR-1B
NFPA 13D
(4 of 4)

CHESTERFIELD COUNTY DEPARTMENT OF PUBLIC UTILITIES

NOTE:

1. DOUBLE CHECK DEVICE SHALL BE INSTALLED IN A BOX AS NEAR TO THE WATER MAIN AS POSSIBLE WITHOUT PLACING BOX IN AREAS SUBJECT TO VEHICULAR TRAFFIC.
2. DOUBLE CHECK ASSEMBLY MUST BE U.L. LISTED OR F.M. APPROVED AND APPROVED BY CHESTERFIELD COUNTY'S DEPT. OF UTILITIES (SEE PART IV AND PART V OF THE SPECIFICATIONS).
3. FIRE SUPPRESSION LINE SHALL BE INSTALLED IN ACCORDANCE WITH THE SERIES OF FIR-1 DETAILS.
4. THE VAULT SHALL BE WATERTIGHT. THE VAULT SHALL BE COATED ON THE OUTSIDE FACE WITH A MASTIC OR BITUMINOUS COATING TO PREVENT INFILTRATION.

PLAN



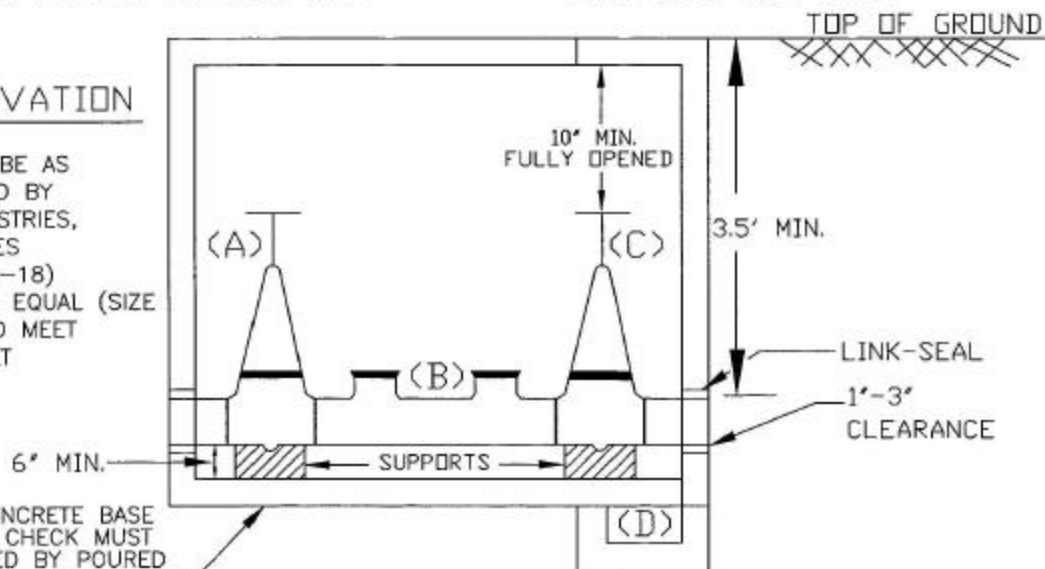
- (A) OUTSIDE STEM AND YOKE GATE VALVE
(B) DOUBLE CHECK DEVICE
(C) OUTSIDE STEM AND YOKE GATE VALVE

- (D) SUMP PUMP WHERE WATER TABLE IS
A PROBLEM OR GRAVITY DRAIN
WHERE WATER TABLE IS NOT

ELEVATION

VAULT SHALL BE AS MANUFACTURED BY CARSON-INDUSTRIES, LTD. (M-SERIES MODEL G3048-18) OR APPROVED EQUAL (SIZE NECESSARY TO MEET MINIMUM VAULT STANDARDS).

BOX WITH CONCRETE BASE AND DOUBLE CHECK MUST BE SUPPORTED BY POURED IN PLACE CONCRETE PIPE SADDLES OR METAL PIPE STANDS (COATED WITH RUST RETARDANT) COATING.



[>100 FEET]

DATE
JAN. 1996

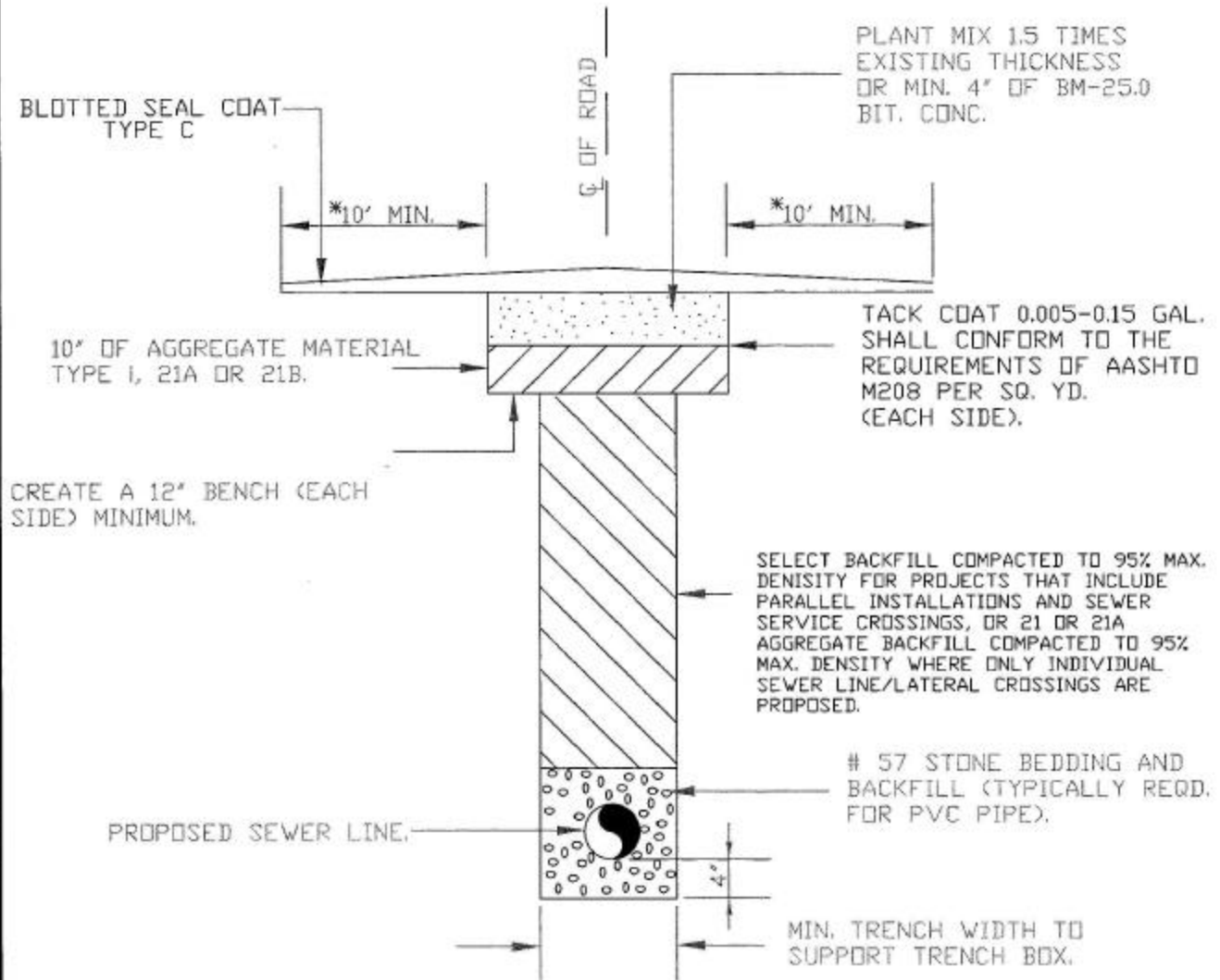
REVISIONS
JAN. 2005

2" OR SMALLER
DOUBLE CHECK ASSEMBLY AND VAULT

DRWG. NO.

FIR-2

CHESTERFIELD COUNTY DEPARTMENT OF PUBLIC UTILITIES VDOT APPROVED



* REPLACEMENT OF PAVEMENT SHALL BE FROM
EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

SURFACE - BLOTTED SEAL COAT TYPE C: THE
INITIAL SEAL AND FINAL SEAL SHALL CONFORM
TO THE REQUIREMENTS OF AASHTO M208 @
0.17 GAL./SQ. YD. WITH 15 LBS. OF NO 8P
STONE/SQ. YD. EACH. THE BLOT SEAL SHALL
CONFORM TO THE REQUIREMENTS OF AASHTO
M208 @ 0.15 GAL./SQ. YD. WITH 10 LBS. OF
FINE AGGREGATE GRADE B SAND PER SQ. YD.

DATE
JAN. 1996

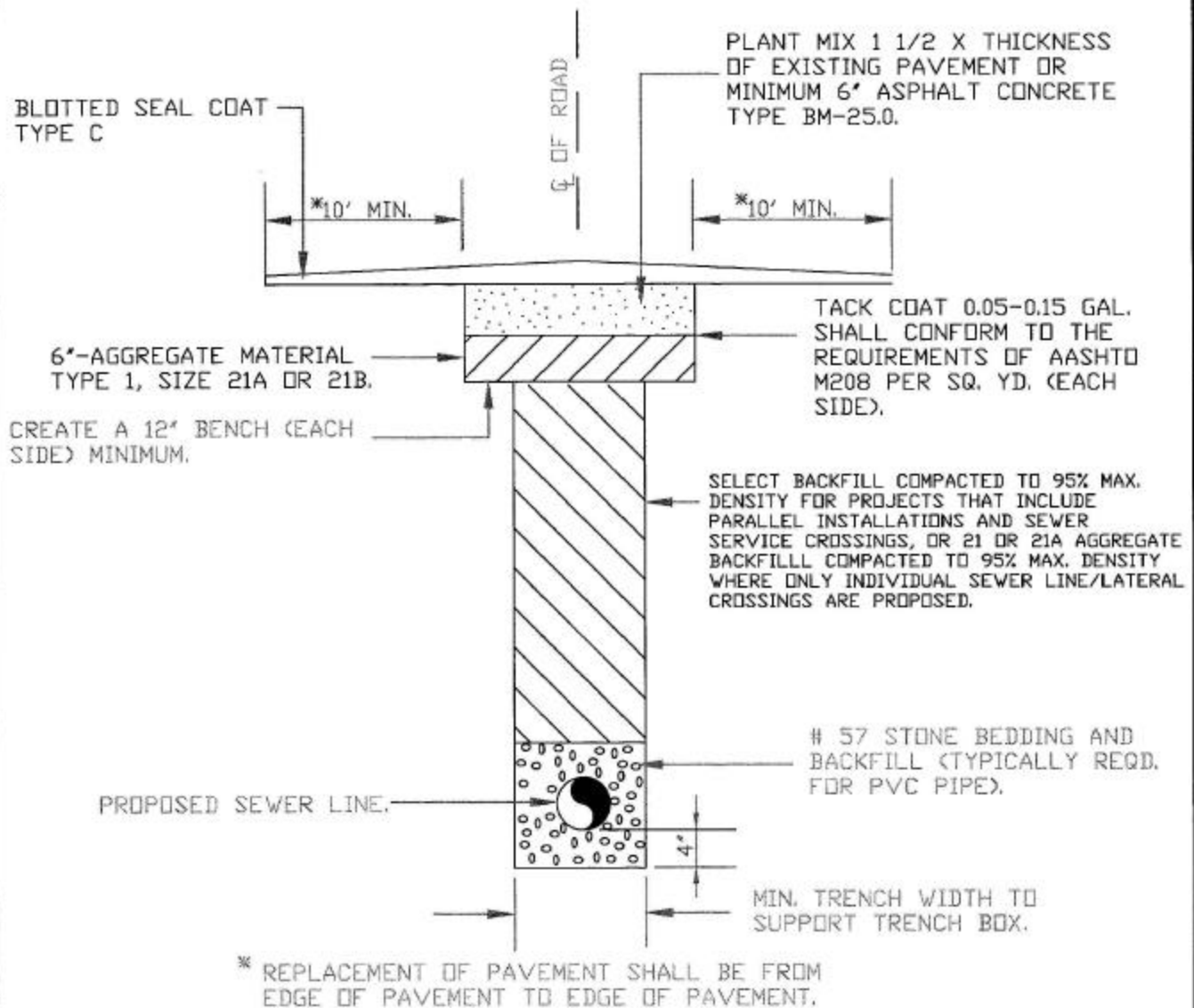
REVISIONS
JAN. 2005

TYPICAL SECTION FOR REPAIR OF OPEN CUT AFTER
PLACEMENT OF SEWER IN SURFACE TREATED ROAD
(APPLIES TO PARALLEL INSTALLATION & SERVICE CROSSINGS)

DRWG. NO.

PAV-3

CHESTERFIELD COUNTY DEPARTMENT OF PUBLIC UTILITIES VDOT APPROVED



SURFACE-BLOTTED SEAL COAT TYPE C: THE INITIAL SEAL AND FINAL SEAL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M208 @ 0.17 GAL./SQ. YD. WITH 15 LBS. OF NO. 8P STONE/SQ. YD. EACH. THE BLOT SEAL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M208 @ 0.15 GAL./SQ. YD. WITH 10 LBS. OF FINE AGGREGATE GRADE B SAND PER SQ. YD.

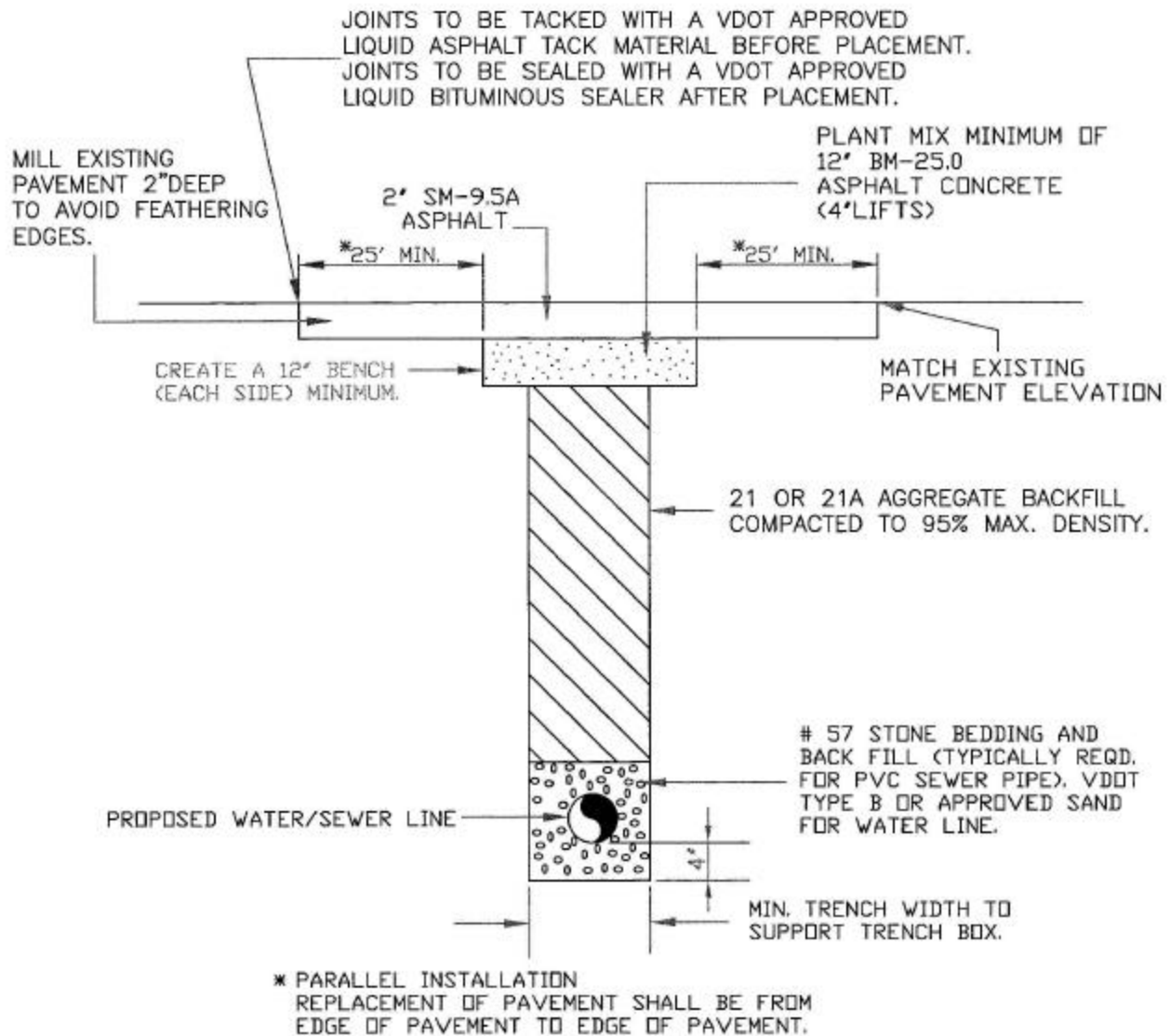
DATE
JAN. 1996

REVISIONS
JAN. 2005

TYPICAL SECTION FOR REPAIR OF OPEN CUT AFTER PLACEMENT OF SEWER IN SURFACE TREATED ROAD WHERE A PLANT MIX OR CONCRETE BASE IS PRESENT
(APPLIES TO PARALLEL AND SERVICE CROSSINGS)

DRWG. NO.
PAV-4

CHESTERFIELD COUNTY DEPARTMENT OF PUBLIC UTILITIES VDOT APPROVED



DATE:
JAN. 1996

REVISIONS:
JAN. 2005

TYPICAL SECTION FOR REPAIR OF OPEN CUT
AFTER PLACEMENT OF WATER AND SEWER
LINES IN PLANT MIX ROADS

DRWG. NO.
PAV-5

THE FOLLOWING PAGES
ARE TO BE PLACED
IN **PART IV**
OF THE
CHESTERFIELD COUNTY WATER AND SEWER
SPECIFICATIONS AND PROCEDURES

GENERAL CONDITIONS

1. GENERAL:

- A. Construction will not be allowed to begin until all criteria of the design review process have been satisfied and permission has been granted by the County's Utilities Construction Section. If construction begins prior to permission being granted, the County reserves the right to require the contractor to uncover and/or remove unauthorized work.
- B. At the option of the Inspection Section, a pre-construction meeting may be required. Prior to beginning work, at least 48 hours advance notice must be given to the Inspection Section. Notification shall be given to the Chief Utilities Inspector at 748-1576.
- C. Where applicable, three copies of construction "cut-sheets" shall be submitted to the Utilities Department prior to the beginning of construction. "Cut-sheets" shall show centerline and offset hub elevations and amount of cut. Cut sheets are required on all gravity and force main wastewater projects, on water line projects where the final grade on future roads and paved areas can not be determined, and on projects where lines are installed in easements. Cut sheets are to be prepared by a qualified engineer or surveyor. Cut sheets shall consist of the following information:
 - 1) Temporary bench marks at each manhole.
 - 2) Each downgrade manhole is to begin with station 0+00 to readily identify the station of each service connection.
 - 3) Where the County is participating in the cost, elevations on centerline cuts are required every 25 feet.
 - 4) Centerline elevations every 50 feet and at every valve box and manhole location for water line projects where cut sheets are permitted and for force main projects.
 - 5) For water designs only, stationing shall be the same as used for the new road.
- D. The Contractor shall be required to have all erosion and sediment control measures in place and approved before beginning clearing or construction.
- E. The Contractor is reminded of the requirements of permits issued by Chesterfield County, the Virginia Department of Transportation and other agencies and the obligation that the requirements of these permits be strictly adhered to.

- F.** The Contractor is reminded that prior to the installation of water mains, the design engineer must certify in writing that:
- 1) All pavement and shoulder areas within the right-of-way are graded to within 6" of subgrade.
 - 2) All ditches and slopes to 1 foot outside the right-of-way have been graded to final grade.
 - 3) Markers for the sewer laterals are visible.
 - 4) All necessary property pins have been installed.
- G.** It shall be the responsibility of the Developer or his agent to acquire offsite easements necessary for water or sewer installation. Developer shall adhere to any agreements negotiated with the landowner regarding restoration of the easement.
- H.** Contractor will not be allowed to remove the pre-assembled flushing mechanism and make the tie-in to the existing water system until all water and sewer utility work, including punch list items, are completed.
- I.** Any work performed outside the boundary of a new subdivision and/or site development shall be considered work which the Developer, Engineer, and/or Contractor must comply with other requirements not covered in Part IV that are applicable such as the following sections:
- 1) PART III, Section 1 - Site Clearing
 - 2) PART III, Section 2 - Site Demolition
 - 3) PART III, Section 3 - Erosion and Sediment Control
 - 4) PART III, Section 7 - Establishing Vegetation
- J.** The following specifications cover the construction of developer projects:
- Section 1 - Trenching, Backfilling and Compaction
Section 2 - Sanitary Sewer Systems
Section 3 - Water Distribution Systems

These specifications are to be used in conjunction with the County's Standard Details, county's approved materials list and materials specification, and where applicable, any specifications and requirements as set forth in Part III - entitled "County Water and Sewer Projects Construction Specifications".

2. DEFINITIONS:

A. COMPLETION:

Completion of work indicates that all sewer pipe, water pipe,

valves, appurtenances, buildings, equipment and any other required items have been installed and appropriately tested in accordance with the plans, specifications and contract, all submittals including any O&M manuals have been made, all punch list items, right-of-way, easement, property and pavement restoration work has been completed as required. The use of water or wastewater lines by the contractor for the purpose of completing the testing of equipment or piping, the tie-in of water or wastewater lines, or the continued necessary use of equipment or piping because of tie-ins or testing shall in no way be construed as completion of work until the conditions of the first sentence of this definition has been satisfied.

B. CONTRACTOR:

The Developer's Agent, acting directly or through his agents, who has contracted to perform the work.

C. COUNTY:

The party of the second part to the County/Developer Agreement, Chesterfield County, acting through the Director of Utilities or his duly authorized agents.

D. ENGINEER:

The Consulting Engineer who has been designated by the Developer as Engineer in relation to the project, whether acting directly or through properly authorized agents, inspectors or representatives.

E. FINAL INSPECTION:

An inspection by the county inspector and contractor of all items covered by the County/Developer contract that results in a punch list of items remaining to be completed or submitted to satisfy the County's specifications.

F. FINAL ACCEPTANCE:

A written statement from the County to the Developer stating that as of a certain specific date all punch list items from the final inspection have been corrected and all necessary submittals have been made and the conditions of the County/Developer contract have been satisfied.

G. INSPECTOR:

The person appointed by the County's Director of Utilities to carry out instructions given by the County and to inspect the materials and work performed under this Agreement.

H. SUBCONTRACTOR:

Any individual, firm or corporation having a direct contract with the Contractor for the performance of any part of the work.

I. WARRANTY PERIOD:

A one year guarantee of equipment and labor by the Developer that begins on the date of final acceptance. (With a three year warranty on road work or in accordance with VDOT's latest requirements.)

J. OTHER:

Other definitions applicable may be found in the County's latest Utilities and Subdivision Ordinances and Part III of the County's Construction Specifications.

3. LAWS AND REGULATIONS:

The Contractor shall keep fully informed of all State and Federal laws and local ordinances, and regulations in any manner affecting those employed or engaged in the work, or in any way affecting the conduct of the work, and of all such orders or decrees of bodies or tribunals having jurisdiction or authority over same.

The Contractor shall protect and indemnify the County and its officers and agents against any claim or liability arising from or based on the violation of such laws, ordinances, regulations, orders or decrees, whether by himself or his employees.

Attention is called to Rules and Regulations Governing the Safety and Health of Employees Engaged in Construction as adopted by the Safety and Health Codes Commission of the Commonwealth of Virginia and all latest revisions thereto and issued by the Department of Labor and Industry.

The Contractor shall perform all construction operations in accordance with the U.S. "Occupational Safety and Health Act of 1970", the Standards of the U.S. Department of Labor, Occupational Safety and Health Administration and the latest amendments thereto.

4. PERMITS:

The Contractor must obtain all required licenses and permits and pay all charges and expenses connected with the work, and be responsible for all damages to persons or property which may occur in connection with the prosecution of the work.

Misunderstanding or ignorance of these laws on the part of the Contractor will not be considered as a valid excuse for his failure to secure the necessary permits.

5. MATERIALS AND WORKMANSHIP:

It is the intent of the County's specifications to describe definitely and fully the character of materials and workmanship required with regard to all ordinary features, and to require first-class work and materials in all particulars. For any unexpected

features arising during the progress of the work and not fully covered in the County's specifications, County will require first-class work to be performed and materials to be used by the Contractor. It is understood that the County/Developer contract includes any and all work that may be necessary to connect the work done with the adjoining work in a proper and workmanlike manner.

The County reserves the right to employ an independent testing laboratory to conduct tests of materials, etc. as the County may deem necessary to assure complete compliance with the requirements of the County's specifications. The Contractor shall offer full cooperation with personnel in the employ of the County in making these tests.

6. NO DEVIATION FROM PLANS SPECIFICATIONS, ETC. BY THE CONTRACTOR:

The Contractor shall not deviate from the plans, profiles, cross-sections and specifications in any particular except on written consent of the County. If deviation occurs on the part of the Contractor, he shall correct the error at his expense in a manner satisfactory to the County.

7. OTHER PLANS AND WORKING DRAWINGS (SHOP DRAWINGS):

Such information as is necessary to give a comprehensive idea of the construction contemplated, are shown on the plans. Contractor shall submit to the County Inspector and Engineer, for their approval, such additional detailed shop or working drawings as may be required for the construction of any part of the work. Pending the approval of such drawings, any work done or materials ordered shall be at the risk of the Contractor.

Working drawings shall consist of such detailed drawings as may reasonably be required for successful prosecution of the work, and which are not included in the plans furnished by the Engineer. These may include drawings for anchor bolts, centering and form work, masonry, layout diagrams, etc.

It is expressly understood that the approval of working drawings relates to the general concept and not the detail and such approval will not relieve the Contractor from any responsibility for errors or omissions in dimensions or quantities.

It is understood that Shop Drawings or Working Drawings processed by the Engineer are not Change Orders; that the purpose of Shop or Working Drawing submittals by the Contractor is to demonstrate to the County that the Contractor understands the design concept, to demonstrate his understanding by indicating which equipment and material he intends to furnish and install, and by detailing the fabrication and installation methods he intends to use.

If deviation, discrepancies, or conflicts between Shop Drawing submittals and the plans and specifications are discovered either prior to or after Shop Drawings submittals are processed, the plans and the County's specifications shall control and shall be followed. All Shop or Working Drawings and blueprints shall be made at the expense of the Contractor.

8. DISCREPANCIES:

Any discrepancies found between the plans and the County's specifications and site conditions or any inconsistencies or ambiguities in the plans or specifications shall be immediately reported to the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

9. CORRECTION OF WORK:

The Contractor shall promptly remove from the premises all work rejected by the Engineer or County Inspector for failure to comply with the County's specifications, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work in accordance with the County's specifications and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected work within ten (10) days after receipt of Written Notice, the County may remove such work and store the materials at the expense of the Contractor.

10. CHARACTER OF WORKMEN AND EQUIPMENT:

The Contractor shall employ such superintendents, foremen and workmen as are careful and competent.

11. SUPERINTENDENT:

The Contractor shall personally supervise the work and when not personally present shall be represented by a Superintendent who shall have full authority to act as the Contractor's representative and all orders and instructions given to the Superintendent shall have the same force and meaning as if given to the Contractor in person. The Superintendent or Contractor shall be on duty at all times while the construction work is being done.

12. RESPONSIBILITY OF CONTRACTOR:

The Contractor shall take all responsibility for the work, and take all precautions to prevent injuries to persons and property in or about the work.

THE FOLLOWING PAGES
ARE TO BE PLACED
IN **PART V**
OF THE
CHESTERFIELD COUNTY WATER AND SEWER
SPECIFICATIONS AND PROCEDURES

PART V

APPROVED MATERIALS AND MANUFACTURERS LIST AND MATERIAL SPECIFICATIONS CHESTEFIELD COUNTY, VIRGINIA

INSTRUCTIONS for viewing and/or printing this document:

Click on PART V above to view or print this portion of the specifications. Each section has been set up with bookmarks making it more convenient to locate various topics within the document. After pulling up the section you wish to view or print, click on “BOOKMARKS” in the left hand margin of the document. (When printing the document, please remember to print this table of contents and include it in your book.)

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**DEPARTMENT OF PUBLIC UTILITIES
CHESTERFIELD COUNTY
APPROVED
MATERIALS LIST**

**(Minimum Criteria: Meets AWWA and/or ASTM Standards and
Chesterfield County Design Standards, Latest Revisions)**

SECTION 1: WATER SYSTEM

A. Pipes

1. C-900 or C-909 - P.V.C. (DR-18, CL. 150) (Sizes 6", 8" & 12")
2. a. Class 51 minimum or higher classification depending upon design consideration. (Push-On and Mechanical Joint) (6", 8", 12", 16", 20", 24", 30" & 36")

b. Restrained Joint Pipe (Pipe Application: Use only where mechanical joint pipe is not available or in vertical applications).
 - 1) Griffin Snap-Lok (6" - 30")
 - 2) American D.I. Pipe Flex-Ring (6" - 36")
 - 3) U.S. Pipe TR-FLEX (6" - 36")
 - 4) Clow Super Lock D.I. (6" - 24")
 - 5) McWane D.I. (30" - 36")
3. Prestressed Concrete Pressure (AWWA C301 as modified)

B. Valves

1. Resilient Seated Gate Valves (for main sizes 4"-12" only)
 - a. American Flow Control - Series 500 Gate Valve with Non-Rising Stem (NRS)
 - b. Clow R/W Valve
 - c. U.S. Pipe - Metroseal 250: with non-rising stem (NRS) and outside stem yoke (OSY)
 - d. M&H (Style 3067-NRS; 3068 OSY)
 - e. Kennedy (Model KenSeal II 4571RSGV)
 - f. Mueller A-2360 (Resilient Wedge)
 - g. American Flow Control - Series 2500 (Resilient Wedge)

2. Butterfly Valves (For Use on 16" and Larger Lines)
 - a. Mueller - Lineseal III
 - b. DeZurik Baw AWWA
 - c. Pratt's Groundhog Class 150B and Triton HP-250
 - d. M&H Style 4500 (for 16"-24")
and Style 1450 (for 30"-54")
 - e. Mosser Series 810 & 830
 - f. Rodney Hunt Streamseal (24" and Larger)
 - g. K-Flo 47 Series (30"-72")

C. Fire Hydrants

1. Mueller Centurion A-421
2. Kennedy "K81D" (Dual rotated hydrant)
3. M & H Style 929 Reliant
4. U.S. Pipe - Metropolitan 250 (Model 94)
5. Clow Medallion
6. American Darling - Mark 73

D. Meter (Setters) Yokes

1. For 5/8" Meters:

5/8" x 7" Riser Meter Yoke with one lockwing ball or plug type, full port angle meter stop, with saddle nuts, 3/4" copper tube flare or compression connection inlet and outlet.

- a. Ford

- 1) V71-7W-22-33 (plug type angle stop with copper flare connections inlet and outlet)
- 2) V71-7W-44-33G (plug type angle stop with compression connections inlet and outlet for copper pipe)

- 3) VB71-7W-22-33 (ball type angle stop with copper flare connections inlet and outlet)
- 4) VB71-7W-44-33G (ball type angle stop with compression connections inlet and outlet for copper pipe)

b. McDonald

- 1) 29-107WXCC33 (ball type angle stop with copper flare connections inlet and outlet)
- 2) 21-107WXTT33 (ball type angle stop with compression connections inlet and outlet for copper pipe)

c. Mueller

- * 1) H-1434 (plug type angle stop with plain NPT ends, also requires H-15450 end connections for copper flare inlet and outlet)
- 2) H-1470-5 (plug type angle stop with compression connections inlet and outlet for copper pipe)
- * 3) B-2434 (ball type angle stop with plain NPT ends, also requires H-15450 end connections for copper flare on inlet and outlet)
- 4) B-2470 (ball type angle stop with compression connections inlet and outlet for copper pipe)

* **Note:** County requires manufacturer to supply these connections "completely factory assembled" and tightened to proper torque.

2. For 1" Meters:

Commercial - Domestic use by Businesses, Doctors and Dentists Etc.

1" x 12" Riser Meter Yoke with two lockwing, ball or plug type angle stop on inlet and outlet, saddle nuts, copper tube flare or compression inlet and outlet with ball valve bypass.

a. Ford

- 1) VV74-12W-22-44 w/ball valve bypass
- 2) VVB-74-12W-22-44 w/plug valve bypass
- 3) VV74-12W-44-44G (with compression connections inlet and outlet for copper pipe)

b. McDonald

- 1) 29B412WWCC443
- 2) 29B412WWT443 (with compression connections inlet and outlet for copper pipe)

All Other Users i.e. for Irrigation, Residential, Etc.

1" x 12" Riser Meter Yoke with 1 locking ball or plug type angle stop on inlet only, saddle nuts, copper tube flare inlet and outlet. No bypass.

a. Ford

- 1) V74-12W-22-44
- 2) V74-12W-44-44G (with compression connections inlet and outlet for copper pipe)

3. For 1½" and 2" Meters (Businesses, etc. with bypass):

- *a. Ford - for 1½" Meter - VBB76-7B-11-66
and for 2" Meter - VBB77-8B-11-77
- *b. Mueller (for both) - H-1423
- *c. A.Y. McDonald - Model 20A609 WWFF 665 for 1½" meter,
Model 20A709 WWFF 775 for 2" meter

For 1½" and 2" Meters (residential and irrigation):

- *a. Ford - for 1½" Meter - VBB76-7-11-66 and
for 2" Meter - VBB77-8-11-77
- *b. A.Y. McDonald - for 1½" Meter - 20-609 WWFF 660
for 2" Meter - 20-709 WWFF 770
- *c. Mueller (for both 1½" and 2") - #1422-00

*These products are acceptable provided manufacturer makes the necessary modifications to comply with the County's materials specifications for 1½" and 2" water meter setters.

**E. Corporation Stops - Plug Type only for ¾" and 1";
Plug Type or Ball Valves for 1½" and 2"**

(¾" thru 2" with "cc" thread inlet)

1. Mueller

- a. H-15000
- b. H-15008 (¾" and 1" corp stop with compression outlet for copper) or

- H-15071 (¾" and 1" connector only to convert a normal H-15000 corp stop to compression, to avoid using special tapping machine adapters)
- 2. Ford
 - a. F-600 (Plug type with flare outlet only for ¾" and 1")
 - b. F-1000-3G (¾" corp stop with compression connection for copper) or C04-33G (¾" connector only to convert a normal F-600-3 corp stop to compression, to avoid using special tapping machine adapters)
 - c. F-1000-4G (1" corp stop with compression connection for copper) or C04-44G (1" connector only to convert a normal F-600-4 corp stop to compression, to avoid using special tapping machine)
- 3. McDonald
 - a. 4701
 - b. 4701-T (¾" and 1" corp stop with compression outlet for copper) or 4700-T (¾" and 1" connector only to convert a normal #4701 corp stop to compression, to avoid using special tapping machine adapters)
- 4. JJC #J-1500
- 5. Ford FB-600 (Ball valve with flare outlet only for 1½" & 2")
- 6. Ford FB-1000G (Ball valve with compression outlet only for 1½" & 2")
- 7. Cambridge Brass
 - a. 102-A Plug type with flare or compression outlet - ¾", 1", 1½", 2")
 - b. 201-A Ball valve with flare or compression outlet - 1½", 2")

Compression Fittings - (for 1½" and 2" only)

- 1. Mueller 110
- 2. McDonald T-Compression
- 4. Ford Grip Joint
- 5. Cambridge Compression - CB

2. Hi-Density Polyethylene Plastic Box (for 5/8" and 1" water meters and assemblies only in areas not subject to vehicular traffic):
 - a. Mid-States Plastics' meter box (for 5/8" water meters)
MSBC1015-24-RL with cast iron cover and reader lid
 - b. Mid-States Plastics' meter box (for 1" water meters)
MSIBC1118-26-RL with ductile iron cover and reader lid
3. Cast Iron Box (for 5/8" water meters and assemblies only in areas subject to vehicular traffic):
 - a. Capitol Foundry Design # MBX-10 and MBX-11

N. Valve Boxes (Slip Type Only)

1. SIGMA
2. Bingham and Taylor
3. Capitol Foundry
4. Star Pipe

O. Copper Tubing - (as manufactured for domestic use)

1. Type "K" (soft) - for 3/4" and 1" service lines
2. Type "K" (hard copper only) - for 1 1/2" and 2" service lines

P. Service Saddles - (epoxy or nylon coated with double stainless steel straps, except Ford may have a 1 3/4" wide strap and 2 bolts)

1. ROMAC - Style 202N
2. Smith-Blair (Rockwell) SB 317
3. Ford FC 202 Series, with cc Threads
4. PowerSeal Model No. 3417DI (with double straps)

5. Cascade - Styles CNS2 (for 12" and smaller pipe), and CDSLDD (large diameter saddles for 16" and larger pipe)
6. Mueller - Model DRS2 (with double straps for 2"-12")

Q. Pipe Restraints (must be UL Listed and FM Approved)

1. For PVC Pipe (Sizes up to 12")
 - a. Megalug Series 2000 PV (PVC Pipe - MJ Fittings)
Megalug Series 1500 (PVC Bell and Spigot Joints)
 - b. Romac Style 611 (PVC Bell and Spigot Joints)
 - c. Uni-Flange Series 1390-C (PVC Bell and Spigot Joints)
Uni-Flange Series 1500 (PVC Pipe - MJ Fittings)
 - a. STARGRIP Series 3600 (PVC Pipe - MJ Fittings)
 - b. AquaGrip Intergral Restraint System for use on the Centurion Fire Hydrants and Mueller RS Valves
 - c. SIGMA One-Lok Model SLC
2. For Ductile Iron Pipe -
 - a. Megalug 1100 Series (MJ Fittings) All Sizes
 - b. Uni-Flange Series 1400 Block Buster Wedge Action Retainer Glands (MJ Fittings) Sizes 4"-24"
 - c. Uni-Flange Series 1390-C (Bell and Spigot Joints) Sizes 6"-16"
 - d. STARGRIP Series 3000 (MJ Fittings) Sizes 4"-48"
STARGRIP Series 3600 (MJ Fittings) Sizes 4"-12"
 - e. RomaGrip Sizes 4"-12"
 - f. SIGMA One-Lok Model SLD (MJ Fittings) Sizes 4"-36"
 - g. EZ-LOK restraint gland (4"-24")

SECTION 2: SANITARY SEWER SYSTEM

A. Pipes - Gravity

1. Concrete
 - a. Circular Reinforced (ASTM C76)
2. PVC Sanitary Sewer Pipe SDR35 (ASTM D3034 6" - 15")
3. PVC Sanitary Sewer Pipe Envrio-Tite SDR 35 (ASTM F1760 6"-15")
4. PVC Sanitary Sewer Pipe SDR 35 (ASTM F679, 18"-48"), T1 Wall Thickness
 5. Perma Loc (21"-36") Series 46 with minimum wall thickness of 17"
6. Ultra Rib (21"-36") with minimum wall thickness of .17"
7. Ductile Iron Pipe Class 52 Minimum or higher classification depending upon design consideration. (Push-On and Mechanical Joint) (6", 8", 10", 12", 16", 20", 24", 30" & 36")
 8. Carlon Vylon H.C. - a.k.a. Lamson Pipe (21"-48") with minimum wall thickness of .17"
 9. Ultra-Corr PVC Pipe (24"-36") with minimum wall thickness of .17"

Pipe - Pressure

1. C-900 or C-909 - P.V.C. (DR-18, CL. 150) (Sizes 6", 8" & 12")
2. a. Class 51 minimum or higher classification depending upon design consideration. (Push-on and Mechanical Joint) (6", 8", 12", 16", 20", 24", 30" & 36")
 - b. Restrained Joint Pipe (Pipe Application: Use only where mechanical joint pipe is not available or in vertical applications).

American Flow Control
6900 Roswell Road Apt. P-4
Atlanta, GA 30362-0700

(770) 730-9925
FAX (770) 730-9985

LINE STOPPING VALVES

MANUFACTURERS:

1. Hydra-Stop Inc. (800) 538-5111
12601 South Homan Avenue
Blue Island, IL 60406

SERVICE MATERIAL

MANUFACTURERS:

**METER YOKES (MY), CORPORATION STOPS (CS), COMPRESSION FITTINGS (CF),
CURB STOPS (CBS), (See Part V, Section 1 for approved Model #'s)**

- MY,CS,CF, 1. Mueller Company (217) 320-6278
CBS 500 West Eldorado Street
Decatur, IL 62525

- MY,CS,CF, 2. Ford Meter Box Co., Inc. (219) 563-3171
CBS 775 Manchester Ave. P.O. Box 443
Wabash, IN 46992

Ford Meter Box Co., Inc. (804) 747-9955
c/o Loyal Butts
1695 Brackets Bend Road
Powhatan, VA 23139

- MY,CS, 3. A. Y. McDonald Manufacturing Co. (319) 583-7311
CF,CBS P.O. Box 508 4800 Chavenelle Road or
Dubuque, IA 52001 (800) 292-2737

- CS 4. James Jones Company (818) 443-6191
4127 Temple City Boulevard
El Monte, CA 91734

- CBS,CS, 5. Cambridge Brass (519) 621-5520
CF P.O. Box 249, 140 Orion Place FAX (519) 621-8038
Cambridge, Ontario N1R-5V1

BF	4.	Tindall Concrete Products, Inc. 3076 N. Blackstock Rd., P.O. Box 1778 Spartanburg, SC 29304	(800) 849-4521 (864) 576-3230 FAX (864) 587-8828
BF	5.	The Clear Flow Company P.O. Box 1467, 1321 N. Delphine Ave Waynesboro, VA 22980	(540) 949-8386 FAX (540) 885-3280
BF	6.	Rotondo Precast A Division of Old Castle Precast 5515 Massaponax Church Road Fredericksburg, VA 22407	(540) 898-6300 FAX (540) 898-2389
WM (3" & 4") BF	7.	M&B Concrete Products Inc. P.O. Box 2250 Chester, VA 23832	(804) 748-5557 FAX (804) 748-5557

METER BOXES (for 5/8" and 1" water meters)

MANUFACTURERS:

POLYETHYLENE

1.	Mid-States Plastics, Inc. 280 Midland Trail Mt. Sterling, KY 40353	(800) 444-7615 (606) 498-7615 FAX (606) 498-7919
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CAST IRON

1.	Capitol Foundry of Virginia, Inc. 2856 Crusader Circle Virginia Beach, VA 23456	(804) 427-9431 <u>Mailing Address:</u> P.O. Box 2212 Va. Beach, VA 23452
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SERVICE SADDLES

MANUFACTURERS:

1.	ROMAC Industries, Inc. 1064 4th Avenue S. Seattle, WA 98134	(800) 426-9341
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2. Smith-Blair, Inc. (800) 643-9705
A BTR Company
P.O. Box 5337
Texarkana, TX 75505
3. Ford Meter Box Company (219) 563-3171
775 Manchester Avenue
P.O. Box 443
Wabash, IN 46992
4. Power Seal Pipeline Products Corp. (817) 767-5566
P.O. Box 2014 (800) 800-0932
Wichita Falls, TX 76307 FAX (817) 732-8378
5. Cascade Waterworks (312) 553-0840
Manufacturing, Inc. (800) 426-4301
1213 Badger FAX (312) 553-0181
Yorkville, IL 60560
6. Mueller Company (217) 320-6278
500 West Eldorado Street
Decatur, IL 62525

AIR RELEASE VALVES

MANUFACTURERS:

1. APCO Valve & Primer Corporation (708) 529-9000
1420 S. Wright Blvd. FAX (708) 529-9007
Schaumburg, IL 60193-4599
2. G.A. Industries (412) 625-3541
9025 Marshall Road
Mars, PA 16046
3. Cla-Valve Company (301) 652-9244
7720 Wisconsin Ave., Suite 226
Bethesda, MD 20814
4. Clow Special Products Division (817) 767-5566
P.O. Box 2014
Wichita Falls, TX 76307

5. SIGMA Corporation (609) 758-0800
700 Goldman Drive, P. O. Box 300 (800) 999-2550
Cream Ridge, NJ 08514 FAX (609) 758-1158
6. Mueller Co.
Main Office - Decatur, IL
Water Division (800) 423-1323
Canada - Mueller Canada Inc. (905) 878-0541
E-mail: moreinfo@muellercompany.com
www.muellercompany.com
7. Capital Industries (800) 385-1102
7780 Wards Road FAX (434) 821-6036
Rustburg, VA 24588

MARKERS

MANUFACTURERS:

1. Carsonite International (702) 883-5104
2900 Lockheed Way (800) 648-7974
Carson City, NV 89701
2. Greenline (800) 438-4733
1616 Commerce Drive FAX (800) 232-9872
Stowe, OH 44224-1731

FLUSHING HYDRANTS

MANUFACTURERS:

1. GIL Industries, Inc. (904) 434-3912
P.O. Box 3501
Pensacola, FL 32505
2. The Kupferle Foundry Company (314) 231-8738
813 Hemstead Place (800) 231-3990
St. Louis, MO 63102 FAX (314) 231-2820

CASING SPACERS

MANUFACTURERS:

1. Cascade Waterworks Manufacturing, Inc. (312) 553-0840
1213 Badger (800) 426-4301
Yorkville, IL 60560 FAX (312) 553-0181

- b. **General:** Meter setters for domestic use at businesses, Doctor or Dentist offices, restaurants, etc., shall be equipped with a bypass line and valve for meter maintenance. Setters for residential or irrigation uses etc., shall NOT be equipped with a bypass line.

Meter setters for 1" meters shall be 1" x 12" riser meter yokes with copper tube flare nut or compression on the inlet and outlet sides.

All 1 1/2" and 2" meter setters shall be constructed of seamless threaded red brass pipe, standard Type K hard copper tube (per ASTM B-88-62,) high quality brass (per AWWA C-800,) and leadless solder, and provide horizontal female pipe threads on both front and rear connections.

- c. **Bypass:** Meter setters that are equipped with a bypass line and valve shall be appropriately sized with an inverted key or ball type stop threaded directly into the inlet bypass tee fitting. This bypass valve shall have a solid tee head and be either lock wing type or provide a bracket or other device to lock this valve in the "off" position upon installation. If copper tube is used for the bypass line, the compression connection for the copper side of the bypass valve must be as produced by the following manufacturers:

Mueller Co., "110" compression connection for copper pipe; or

Ford Meter Box Co., "Grip Joint" connection for copper pipe; or

A. Y. McDonald, "T" compression connection for copper pipe.

Otherwise, a tee head inverted plug or ball type bypass valve is required with a threaded connection. Both of the bypass tee fittings, (inlet and outlet,) shall have brace pipe eyelets cast within them to stabilize setter upon installation, if necessary.